

Response to Office Action mailed December 8, 2005
U.S. Application No. 10/646,134

REMARKS

Claim Objections

Claims 13-16 were objected to under 37 CFR 1.75(c) for improper form because of dependency on a multiple dependent claim. Claim 13 has been amended to depend from claim 1 to overcome the rejection.

Claim Rejections

35 USC 103(a) Rejection of Claims 1-11, and 13-16 over Sankey et al. ("Sankey") in view of Tipman et al. US Patent No. 5,876,592 ("Tipman")

The rejection cites Sankey for disclosure of the Phased Partial Upgrading process, a pilot hydrotreating project, separation of bitumen into light and heavy fractions using an atmospheric as well as vacuum distillation units, static mixer emulsification, and water content in the emulsion. Tipman is cited for bitumen separation with gas plant diluent, solvent compositions, and centrifugal separations. Applicants respectfully traverse the rejection with respect to the amended claims because Sankey does not teach flash separation (without distillation columns) and because Tipman does not teach the use of gas plant diluent with a bitumen feed without the presence of significant amounts of water and other materials as a "froth".

The Claimed Invention

The invention is directed to providing a commercially reasonable recovery and use of highly viscous and aliphatic crudes without operational problems, such as the recovery of Cold Lake or Athabasca bitumen. In the bottoms recovery from such materials, it has not been commercially practical to stably emulsify those bitumen fractions having high softening points or high densities because impractically high temperatures and pressures were required to create and maintain the stable emulsions.

The invention process overcomes these difficulties of the prior art by providing a practical and relatively inexpensive recovery and separation of heavy bitumen as well as emulsification of the recalcitrant heavier fraction (resid). The independent claims are amended to recite that the bitumen splitting process is either a two-stage flash separation or a gas plant diluent separation (or a combination of these two).

Sankey

As discussed in the background of the specification, the prior art efforts of Sankey were based on the use of distillation towers for separation of either diluted bitumen (preferred) or bitumen. Note that Figure 1. of Sankey specifically recites the costly and impractical (for bitumen recovery) concept of distillation recoveries with three streams taken from the atmospheric unit. This is conventional fractionation, consistent with the discussion in the background at paragraphs [0005-0006], and has been found to be economically impractical in view of the price of fuel alternatives. The first alternative of the present claimed invention uses a less expensive two-stage flash separation process, quite distinct from, and much more practical

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than, distillation. There is no teaching or suggestion in Sankey to replace conventional fractionation with flashing. Also note that a hydrotreater is required.

Tipman

Tipman is directed to the separation of bitumen froths only. These froths contain water and solids from the Clark hot water extraction process. The claimed invention is directed to bitumen separation in accordance with Fig. 1 which shows water/bitumen separator 15 to handle the incoming stream from steam-produced bitumen. By-product gas plant diluents are used in the second alternative of the invention since they represent a commercially practical diluent that does not need complete recovery and separation. Tipman uses pure paraffin materials in most of the examples and the teaching at column 3, lines 21-32 merely refers to relatively pure paraffinic feeds that will need recovery by costly separation. There is no teaching or suggestion in Tipman to use a bitumen feed (not froth) and to use a gas plant diluent not needing recovery. Any similarities of the reference solvents to the gas plant diluent do not overcome the distinction of the invention treating bitumen rather than a froth. Tipman adds nothing to Sankey in leading one to use a bitumen feed without a water-based process for the primary separation.

The skilled artisan would have to discover a recovery process different from the solids and water process shown in Tipman to achieve the invention. That is not demonstrated or suggested in Sankey. Even if the skilled artisan somehow surmised flashing of the remaining diluent in Tipman, this would not suggest the alternative flashing step for bitumen. The invention benefits from the fact that the readily available diluent need not be recycled as required by the prior art since it may be fed to the overall lighter fraction stream in the bitumen pool [0034, 0050]. Reconsideration and withdrawal of the rejection of claims 1-11 and 13-16 are respectfully requested.

35 USC 103(a) Rejection of Claims 12 and 17 over Sankey in view of Tipman and further in view of Wu *et al.* US Patent No. 4,119,149 ("Wu")

Wu

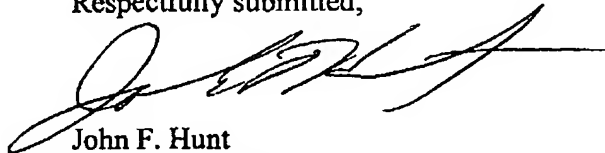
Wu is cited for teaching steam injection in one well to recover petroleum in another in the form of liquid phase and a recovered steam/hydrocarbon vapor phase. Applicant respectfully traverses the rejection.

The addition of Wu does not provide the skilled artisan with the invention as indicated above and, especially with respect to claim 17 does not combine the efficiency of the available gas plant diluent or practical two-stage flash to recycle the recovered bitumen emulsion for use in producing steam for additional recovery. Wu suggests only the injection of the steam distilled hydrocarbon fraction, optionally with additional steam, to again produce petroleum. A bitumen process using steam alone for further recovery of bitumen is not taught or suggested.

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Reconsideration, withdrawal of the rejections, and a notice of allowance is respectfully requested.

Respectfully submitted,



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